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NOTES ON DISTRIBUTION OF NORTH CAROLINA PLANTS—II

WILLIAM B. FOX, R. K. GODFREY AND H. L. BLUMQUIST

THIS is the second¹ in a series of papers dealing with noteworthy records of plants in North Carolina and, for the most part, is based on collections made by the authors during the season of 1949 and early 1950. However, examination of herbaria and literature have yielded collections or records by others, some of which will be cited herein.

Collections in the *Leguminosae* and *Compositae* are not included in this paper since the first two authors plan to publish on these families separately.

In the first paper in this series our information was based primarily on collections in herbaria within the state and on the literature at our disposal. For this one it has been possible, in addition, to check named collections in the Gray Herbarium and the herbarium of the New York Botanical Garden for all of those species for which such a check seemed desirable. Unless otherwise indicated, all specimens cited are in the herbarium of North Carolina State College. Citation of references and the order of enumeration of genera and species follow the plan used in the first paper.

The A. A. S. grant, through the North Carolina Academy of Science, awarded to the first two authors in 1949, aided substantially in the defrayment of travel expenses. We wish to express our appreciation to members of the botany department

¹ See Fox and Godfrey, "Notes on Distribution of North Carolina Plants—I, RHODORA 51: 129-146. 1949.

of the University of North Carolina for the privilege of making frequent use of their facilities, and to the director of the Highlands Biological Station, Dr. Thelma Howell, for courtesies extended to the first two authors during their stay there in August, 1949. We are indebted to the late Professor M. L. Fernald of the Gray Herbarium for reading the manuscript and making valuable suggestions and to Dr. D. S. Correll of the Bureau of Plant Industry, Beltsville, Maryland, for checking his extensive set of records on the flora of North Carolina for collections and records pertinent to this paper and for furnishing us with collection-data from certain specimens in the National Arboretum Herbarium and the U. S. National Herbarium.

AZOLLA CAROLINIANA Willd. WAKE COUNTY: farm-pond, on U. S. Rt. 1, 6 miles n. of Raleigh, June 26, 1947, *Fox & Whitford*; pond, 1 mile s. of Eagle Rock, May 19, 1950, *Whitford*.

Blomquist and Oosting (1948) do not include this fern as a part of the piedmont flora. Blomquist (1934) records it from two coastal counties, New Hanover and Currituck, and Blomquist and Correll (1940) add Brunswick County.

LYCOPodium obscurum L. WARREN COUNTY: Fishing Creek Township, 8 miles s.e. of Warrenton, January 15, 1950, *L. W. Reams*; NORTHAMPTON COUNTY: Jackson, on small hillsides sloping to swamps, November, 1901, *W. Paul Moore s.n.* (in Nat. Arb. Herb.); HERTFORD COUNTY: sloping pine-woods, near swamp, Bigwoods Experimental Forest, August 26, 1948, *Woods & Moreland* BW116.

Blomquist (1934) lists 10 North Carolina counties, as do also Blomquist and Correll (1940), all in the mountain area. We know of no other collections or published records from the lower piedmont and coastal plain of this state.

PASPALUM BIFIDUM (Bertol.) Nash. MOORE COUNTY: moist pocket in longleaf pine sandhills, near Manly on U. S. Rt. 1, September 15, 1949, *Godfrey* 50091.

Curtis (1867) lists this species (as *P. racemulosum* Nutt.) as occurring in North Carolina from the "Coast to Cherokee", but we know of no collections to substantiate this statement. Hitchcock (1935) does not have it extending north of South Carolina, but Fernald (*RHODORA* 40: 388. 1938) has described a variety of this species based on collections made in Sussex County, Virginia.

GLYCERIA PALLIDA Trin. COLUMBUS COUNTY: edge of ditch, border of tupelo-swamp, northwest side of Lake Waccamaw, May 15, 1950, *Blomquist* 15007 (in herb. Duke).

Hitchcock (1935) gives North Carolina as the southern limit of the range of this species, and the dot on his map (p. 94) indicates the western part of the state. Curtis (1867) lists it with the annotation "UP. DIST.", meaning the mountains. However, Blomquist (1948) states that it is "found only in the Dismal Swamp section." The station cited here is in the coastal plain in the southeastern corner of the state, and represents a considerable extension from either of the regions from which it has been previously reported.

PHRAGMITES COMMUNIS Trin., var. BERLANDIERI (Fournier) Fern. CURRITUCK COUNTY: edge of *Spartina cynosuroides* community, Northwest River, near Moyock, October 17, 1948, *Blomquist and Wilson* 13384 (in herb. Duke).

This is the first record for North Carolina.

CYPERUS FLAVESCENS L., var. POAEFORMIS (Pursh) Fern. MACON COUNTY: Horse Cove Bog, near Highlands, August 19, 1949, *Godfrey and Fox* 49993.

Quarterman and Keever (1947) do not list this for the area covered by their checklist.

CYPERUS LECONTEI Torr. BRUNSWICK COUNTY: coarse sand, ditch-bank, Orton Plantation, along the river-road, n. of Southport, August 19, 1948, *Godfrey* 48395; sandy margin of Pretty Pond, July 27, 1949, *Godfrey* 49709.

According to the range given by Small (1933), these collections extend the range northward from Florida.

ELEOCHARIS ALBIDA Torr.² BRUNSWICK COUNTY: margin of salt marsh, Smith's Island, August 27, 1949, *Fox, Godfrey and Beaman* 3249.

Svenson (RHODORA 39: 271-272. 1937) cites a single collection from North Carolina, one by I. F. Lewis from Beaufort.

ELEOCHARIS BALDWINII (Torr.) Chapm. BRUNSWICK COUNTY: sandy margin of Pretty Pond, July 27, 1949, *Godfrey* 49708.

Svenson (RHODORA 39: 240-242. 1937) cites a specimen of Curtis' from Wilmington, none others north of Georgia.

² We are indebted to Dr. H. K. Svenson of the American Museum of Natural History for the determination of duplicates of all the specimens of *Eleocharis* cited herein.

ELEOCHARIS FLAVESCENS (Poir.) Urban. DARE COUNTY: in shallow water, margin of freshwater-pond, behind beach-dunes, Kill Devil Hills, June 11, 1949, *Godfrey and Fox* 49271; CARTERET COUNTY: in shallow water, roadside-canal, 4 miles south of Atlantic, July 14, 1949, *Godfrey, Fox and Blomquist* 49555.

On the range-map published by Svenson (RHODORA 41: 10. 1939), there is one location-dot in North Carolina.

ELEOCHARIS MELANOCARPA Torr. BRUNSWICK COUNTY: margin of pond, near Orton Plantation, 9 miles n. of Southport, June 15, 1949, *Godfrey* 49345; sandy margin of Pretty Pond, July 27, 1949, *Godfrey* 49707.

Wood and McCarthy (1886) list this species for the Wilmington area, but Svenson (RHODORA 39: 269-270. 1937) cites none between New Jersey and Georgia. Fernald (RHODORA 40: 391. 1938) has reported it for one county in southeastern Virginia.

ELEOCHARIS MICROCARPA Torr. BRUNSWICK COUNTY: small cypress-pond, south of the railroad and church at Maco, just s. of U. S. Rt. 76, May 21, 1949, *Godfrey* 49188.

Svenson (RHODORA 39: 228-230. 1937) gives South Carolina as the northernmost limit of the range for the typical variety of the species.

ELEOCHARIS MONTEVIDENSIS Kunth. CURRITUCK COUNTY: cattail-marsh, $\frac{1}{4}$ mile s. of Maple, along N. C. Rt. 158, June 10, 1949, *Godfrey & Fox* 49247.

A northward extension from South Carolina, according to range given by Svenson (RHODORA 34: 220. 1932) for *E. arenicola* Torr., which he later reduced to synonymy.

ELEOCHARIS PARVULA (R. & S.) Link. TYRRELL COUNTY: pond-margin, 1 mile w. of Columbia, June 12, 1949, *Godfrey and Fox* 49311.

Svenson (RHODORA 31: 168-171. 1929) cites no collections from between Virginia and Georgia.

ELEOCHARIS TRICOSTATA Torr. BRUNSWICK COUNTY: burned-over wiregrass savanna, just n. of Southport, along N. C. Rt. 303, May 21, 1949, *Godfrey* 49173; sandy pond-margin, well above water's edge, Marsh Branch, along river-road n. of Southport, June 15, 1949, *Godfrey* 49351; BLADEN COUNTY: shallow cypress-pond, $\frac{2}{5}$ mile e. of Elizabethtown, July 9, 1949, *Godfrey and Fox* 49489.

Svenson (RHODORA 34: 219. 1932) cites no specimens from between New Jersey and Georgia, but Fernald (RHODORA 49: 124. 1947) has reported it for southeastern Virginia.

ELEOCHARIS VIVIPARA Link. BRUNSWICK COUNTY: sandy and peaty pond-margin, $\frac{1}{2}$ mile n. of Calabash, July 29, 1949, *Godfrey and Fox* 49729; CUMBERLAND COUNTY: in shallow water at the edge of Elder Lake, s. of Fayetteville, along N. C. Rt. 87, June 26, 1949, *Godfrey and Fox* 49357; DARE COUNTY: in shallow water, margin of freshwater-pond, behind beach-dunes, Kill Devil Hills, June 11, 1949, *Godfrey and Fox* 49279.

Svenson (RHODORA 39: 242–243. 1937) cites only one specimen from North Carolina, one of Curtis' from Wilmington.

BULBOSTYLIS COARCTATUS (Ell.) Fern. BRUNSWICK COUNTY: scattered tufts in open white sand areas, about 1 mile n. of Southport, August 27, 1949, *Fox and Beaman* 3253; CARTERET COUNTY: scrub-oak sand-ridges, Harker's Island, July 15, 1949, *Godfrey, Fox and Blomquist* 49583; NEW HANOVER COUNTY: sandhills near Wilmington, October 2, 1908, *E. B. Bartram* (in Gray Herb.).

Small (1933) gives the range of this species (as *Stenophyllus coarctatus* (Ell.) Britton) as extending northward to South Carolina, but Fernald (RHODORA 43: 538. 1941) reported it for Virginia, as an "extension north from North Carolina," probably as a result of having seen the last collection listed above.

RHYNCHOSPORA CAPITELLATA (Michx.) Vahl. MACON COUNTY: abundant in Horse Cove Bog near Highlands, August 19, 1949, *Godfrey and Fox* 49990.

This collection is included because this species is not in the check-list for the Highlands area by Quarterman and Keever (1947).

RHYNCHOSPORA DIVERGENS Chapm. BRUNSWICK COUNTY: very abundant in burned-over wire-grass savanna, just n. of Southport, July 26, 1949, *Godfrey* 49702.

Fox and Godfrey (1949) extended the range of this species northward from South Carolina, reporting it for two counties in North Carolina: Carteret and Columbus.

RHYNCHOSPORA PERPLEXA Britton. BRUNSWICK COUNTY: margin of small cypress-pond, Marsh Branch, on the river-road n. of Southport, June 15, 1949, *Godfrey* 49349; BLADEN COUNTY: abundant in a shallow borrow-pit pool between the highway and

railroad, 19 miles n.w. of Elizabethtown, July 9, 1949, *Godfrey and Fox* 49479; CARTERET COUNTY: abundant in peaty soil around the margin of a large cypress-pond, e. of Newport, August 8, 1949, *Godfrey* 49847; ONSLOW COUNTY: abundant in a shallow pond, 3 miles w. of Swansboro, July 16, 1949, *Godfrey & Fox* 49598; EDGEcombe COUNTY: abundant in a small gum-depression between Whitakers and Enfield, July 22, 1949, *Godfrey & Fox* 49643.

Previously known from two North Carolina counties (according to Gale, 1944, and Fox and Godfrey, 1949), a fairly common occurrence in the coastal plain of this state is indicated by these additional records.

RHYNCHOSPORA WRIGHTIANA Boechl. CARTERET COUNTY: savanna, $\frac{1}{2}$ mile n. of Smyrna, along U. S. Rt. 70, July 14, 1949, *Godfrey, Fox and Blomquist* 49551; savanna, near the Sound View Church, w. of Morehead City, along N. C. Rt. 24, August 6, 1949, *Godfrey* 49838.

Gale (1944) cites one North Carolina locality, in Brunswick County.

SCLERIA MINOR (Britton) W. Stone. MACON COUNTY: Horse Cove Bog, near Highlands, August 18, 1949, *Godfrey and Fox* 49991.

This collection is listed since it is not in the checklist for the Highlands region by Quarterman and Keever (1947).

CAREX AGGREGATA Mackenzie. DURHAM COUNTY: east side of residence, 922 Demerius Street, Durham, May 20, 1944, *Blomquist* 13468 (in herb. Duke).

Mackenzie (1940) gives New Jersey & the District of Columbia as the southern limit of range for this species. This is the first report for North Carolina.

CAREX ARENARIA L. NEW HANOVER COUNTY: in beach-sand, Ft. Fisher, March 31, 1938, *Blomquist* 10227 (in herb. Duke).

Mackenzie (1940) gives for the east coast only "Sea Beaches, Virginia" for this species, which he says is "adventive from Europe." Fernald (RHODORA 38: 381 and 399. 1936), however, reporting it for Northampton County, Virginia, expresses the view that there it appears "in every way like an indigenous element of the vegetation; seeming to us like a relic on our coast comparable with many limited colonies from New England to Newfoundland of species which abound in western Europe."

The above station has probably now been destroyed by the removal of this portion of the shore by wave-action, since Blomquist on a recent visit to the area failed to locate any of the plants.

CAREX EXILIS Dewey. MOORE COUNTY: seepage-bog in branch-bay, 3 miles w. of Southern Pines, April 24, 1949, *Godfrey, Fox, F. & S. Woods* 49152.

Mackenzie (1940) gives the range as extending as far south as Delaware. A duplicate of this collection was identified by F. J. Hermann of the Bureau of Plant Industry, Beltsville, Maryland.

CAREX NIGROMARGINATA Schwein., var. *FLORIDANA* (Schwein.) Kükenth. BRUNSWICK COUNTY: in woods-mold in a grove of laurel- and live-oaks on bluff overlooking Cape Fear River at Southport, March 19, 1949, *Godfrey* 49005; in scrub live-oak thickets, old dunes, Long Beach, March 21, 1950, *Godfrey & Fox* 50304.

Mackenzie (1940) gives the range as "Ga. to Fla. to Texas" but Fernald (*RHODORA* 44: 385-386. 1942) validates earlier reports for Elizabeth City Co., Va. and Horry Co., S. C. This report of our collections constitutes the first records for this plant in North Carolina.

CAREX FOENEA Willd. ASHE COUNTY: in clearing at the fire-tower, summit of Nigger Mt., September 7, 1949, *Godfrey & Fox* 50231.

Mackenzie (1940) gives Virginia as the southern limit of the range of this sedge. Curtis (1835) and Wood and McCarthy (1886) had listed it for the Wilmington area, but since this was apparently disregarded by Mackenzie, we are regarding this enumeration as the first authentic report for North Carolina.

CAREX JOORI L. H. Bailey. HERTFORD COUNTY: swampy woods, Big Woods Experimental Forest, e. of Como, October 24, 1948, *Fox, Boyce & Moreland* 2119; SAMPSON COUNTY: low ground under bridge, e. bank of South R., 2 miles w. of Kerr, October 29, 1948, *Fox and Godfrey* 2150.

Mackenzie (1940) gives the range as extending as far north as Maryland, but as far as we can determine, this species has not been reported for North Carolina.

SPIRODELA POLYRHIZA (L.) Schleid. WAKE COUNTY: Marshburn's Pond, June 1, 1947, *Whitford*; small sunny farm-pond, on U. S. Rt. 1, 6 miles north of Raleigh, June 26, 1947, *Fox & Whitford*; Nowell Pond, off U. S. Rt. 64, 1 mile w. of Wendell,

May 18, 1950, *Whitford*; Robertson's Pond, off U. S. Rt. 64, 10 miles e. of Raleigh, May 19, 1950, *Whitford*.

These collections are cited here because this species is not included in the piedmont flora by Blomquist and Oosting (1948).

LEMNA MINOR L. WAKE COUNTY: pond, 1 mile s. of Eagle Rock, May 19, 1950, *Whitford*; Robertson's Pond off U. S. Rt. 64, 10 miles e. of Raleigh, May 19, 1950, *Whitford*.

Blomquist and Oosting (1948) do not include this species.

LUZULA ACUMINATA Raf., var. CAROLINAE (Wats.) Fern. PENDER COUNTY: beech-woods on bluff, Washington Creek between Wallace and Burgaw, March 20, 1950, *Godfrey & Fox* 50307; NASH COUNTY: wooded ravine along Turkey Creek near Middlesex, April 4, 1939, *Godfrey & White* 7013 (in Gray Herb.).

Small (1933) gives the range (as *L. carolinae* Wats.) as "Blue Ridge, N. C. and Tenn.," but we have seen several specimens from the lower piedmont. The Pender County collection extends the known range into the lower coastal plain of North Carolina. There are, however, many specimens in the Gray Herbarium from southeastern Virginia.

UVULARIA PUDICA (Walt.) Fern. WAKE COUNTY: scattered plants intermixed with a thick ground-cover of *Galax* on a steep, north-facing bluff, "The Hemlocks," west of Cary about 4 miles, April 3, 1949, *Godfrey* 49016; Raleigh, 1838 (in herb. NYBG—ex herb. Princeton University, 1945); LINCOLN COUNTY: pine-woods, along N. C. Rt. 150, 6 miles east of Lincolnton, April 17, 1949, *Godfrey, Fox and Woods* 49107; ONSLOW COUNTY: sandy ridge, camp-site, Cowhorn Creek, Hofmann Forest, April 15, 1948, *Boyce*; PENDER COUNTY: near Big Savanna, April 9, 1925, *Wells*.

Blomquist and Oosting (1948) do not include this plant; two of the above-listed stations are definitely in the piedmont. At "The Hemlocks" station both *U. perfoliata* L. and *U. sessilifolia* L. were also abundant on the floodplain at the base of the bluff. Dried specimens of the latter and *U. pudica* are easily confused, especially when made from immature plants in the flowering condition. In the field, however, they are at the time of flowering readily distinguishable in that plants of *U. pudica* occur singly and have clear, pale cream-yellow flowers while those of *U. sessilifolia* are rhizomatous, forming extensive clones, the flowers being a pale and lined straw-yellow.

TRILLIUM PUSILLUM Michx. WAKE COUNTY: alluvial flat, head of Yates' Pond, about 5 miles s. of Raleigh, April 20, 1950, *Fox & Adams* 3561.

Curtis (1867) lists this species for the "LOW. DIST." Peattie (1927) and Small (1933) give ranges for it as including the coastal plain of North Carolina. Barksdale (1938) cited only one station in this state, in Haywood County, this being based on a collection by Harbison. Dr. S. J. Smith of the New York State Museum, Albany, verified our determination. There is a Curtis collection from North Carolina, without locality, in the Herbarium of the New York Botanical Garden.

COMPTONIA PEREGRINA (L.) Coulter. LEE COUNTY: turkey-oak sandhills, near U. S. Rt. 1, 7 miles south of Sanford, August 11, 1949, *Fox* 2884; HARNETT COUNTY: near fire-tower, southeastern part of county, June 17, 1927, *B. W. Wells*; CUMBERLAND COUNTY: Ft. Bragg Reservation, Monroe Hill, 5 miles west of Ft. Bragg, elev. 440 ft., June 20, 1937, *H. R. Totten* (in herb. U. N. C.); WAKE COUNTY: in open woodland, summit of north-facing bluff, Crabtree Creek, n.w. of Raleigh, May 24, 1950, *Godfrey* 50389.

Curtis (1860) states that this species "is occasionally found in dry and sandy woods in the upper part of the Lower (District)" but, judging from known collections, it seems to be very uncommon except in the mountainous part of the state.

FROELICHIA FLORIDANA (Nutt.) Moq. HARNETT COUNTY: sandy road-bank and edge of corn-field, on U. S. Rt. 15A, 4 miles north of Kipling, October 5, 1949, *Fox* 3493; dry, sandy field, 2.7 miles west of Lillington on U. S. Rt. 421, October 5, 1940, *Radford and Stewart* 615.

This adventive species was first reported for North Carolina by Fox and Godfrey (1949), from three North Carolina counties, all in the coastal plain.

ISOPYRUM BITERNATUM (Raf.) T. & G. DURHAM COUNTY: on narrow floodplain just east of big bluff near Mr. Duke's farm, about 4 miles n.e. of Durham, March 26, 1950, *Blomquist* 14833.

Small (1933) gives the range as "west of Appalachians, W. Fla. to Tex., Minn., and S. Ont." The only report for North Carolina of which we are aware is that of D. M. Brown for Roan Mountain, Mitchell County (*Ecol. Monog.* **11**: 61-97. 1941), but the specimen in the Duke University Herbarium upon which

Brown presumably based his report is *Anemonella thalictroides* (L.) Spach.

ARGEMONE ALBA Lestib. BRUNSWICK COUNTY: Southport, August 10, 1930, *Blomquist* 3712; Southport, May 1, 1935, *Andy Matthews* (in herb. U. N. C.); common in vacant lots, weed-borders, and along the streets, Southport, May 13, 1950, *Godfrey and Wiebe* 50378; CARTERET COUNTY: roadside, northeast of Beaufort, June 21, 1941, *Madeline Hill* 37 (in herb. Duke); BLADEN COUNTY: dry, sandy soil, field, 7 miles north of Elizabethtown, May 11, 1941, *Radford & Stewart* 1053 (in herb. U. N. C.).

According to the range given by Small (1933), these collections represent an extension northward from South Carolina.

SARRACENIA RUBRA Walter. ONSLOW COUNTY: longleaf pine savanna, near U. S. Rt. 1, 6 miles south of Verona, August 26, 1949, *Fox* 3225; HARNETT COUNTY: margin of shrub-bog, Spout Springs, June 20, 1927, *Wells*; PENDER COUNTY: "Big Savanna" (near Burgaw), July 2, 1924, *Wells*; COLUMBUS COUNTY: 1884, *G. McCarthy* (in herb. N. Y. B. G.); HENDERSON COUNTY: Flat Rock (in herb. N. Y. B. G.—ex herb. Princeton University, 1945); Eastern North Carolina, 1884, *G. McCarthy* (in herb. N. Y. B. G.); Oriente Carolina Septentrionalis, July, 1885, *G. McCarthy* (in herb. N. Y. B. G.).

Bell (Jour. Elisha Mitchell Soc., **65**: 150. 1949) records two counties for this species in North Carolina: viz., Moore and Brunswick. Dr. D. S. Correll informs us that there are specimens in the U. S. National Herbarium from New Hanover and Columbus Counties. These additional records indicate a more frequent occurrence for it and extend the known range somewhat northward.

HYDRANGEA ARBORESCENS L. CRAVEN COUNTY: mesic woods, bluff on Neuse River above Flanner Beach, July 14, 1949, *Fox and Godfrey* 2669.

We have seen no reports of this species from the coastal plain of this state and but one other collection from that physiographic province, one by H. R. Totten from Cumberland Co. (in herb. U. N. C.).

PRUNUS UMBELLATA Ell. BRUNSWICK COUNTY: roadside-thicket, 1 mile w. of Village Point, July 29, 1949, *Fox & Godfrey* 2824.

According to Coker and Totten (1945) this plum is known from North Carolina only in and near the basin of the Pee Dee River. However, they cite it for the neighborhood of Myrtle Beach, S. C., which is in the county bordering the one cited above. A duplicate of our collection was identified by Dr. Rogers McVaugh, University of Michigan.

POLYGALA CURTISSII Gray. **MACON COUNTY:** abundant in Horse Cove Bog, near Highlands, August 19, 1949, *Godfrey & Fox* 49994.

Included here because it is not in the checklist for the Highlands region by Quarterman and Keever (1947).

SEBASTIANIA LIGUSTRINA (Michx.) Muell.-Arg. **ROBESON COUNTY:** abundant along river-margin, Lumber River swamp below N. C. Rt. 74 bridge, 3 miles n.w. of Lumberton, June 27, 1949, *Fox & Godfrey*; **COLUMBUS COUNTY:** swamp of Lumber River near Boardman, July 2, 1934, *H. A. Rankin* (in herb. U. N. C.); bank of Lumber River, May 8, 1921, *J. S. Holmes* (in herb. U. N. C.).

This shrub is listed by Curtis (1860 & 1867) for the "Low. Dist." and by Wood and McCarthy (1886) for the Wilmington area, in these lists on the authority of Dr. J. F. McRee. Small (1933) gives the range as extending into North Carolina. However, the only collections from the state besides the above of which we are aware are the following, both in the Herbarium of the New York Botanical Garden: one from "Wilmington," by McRee and one from "near Fayetteville, July, 1934," by H. A. Rankin.

RHUS VERNIX L. **WAKE COUNTY:** marshy ground, Smallwood estate, Raleigh, May 12, 1948, *Fox* 1434; swampy hollow, east side of Brooks Ave., 900 block, Raleigh, July 6, 1950, *Fox* 3806.

Coker and Totten (1945) state that "we have never found it in the piedmont section of North Carolina," and Blomquist & Oosting (1948) do not include it. The first listed station, where the species was abundant, has now been destroyed by a housing development.

CYRILLA RACEMIFLORA L. **MOORE COUNTY:** creek-bank, on N. C. Rt. 22, $\frac{1}{2}$ mile s. of High Falls, July 5, 1949, *Fox* 2539.

Coker & Totten (1945) give the range of this coastal plain species as far inland as Wake and Lee Counties. The above

locality seems to be the westernmost known in North Carolina, definitely in the piedmont province.

SIDA INFLEXA Fern. WAKE COUNTY: thin soil on rock, near old mill-dam on Neuse River, Milburnie, August 4, 1948, *Fox & Whitford* 1801.

This species was described by Fernald (RHODORA 42: 463-464. 1940) and its relationship with and differences from *S. Elliottii* T. & G. were discussed. The latter has been reported for North Carolina, Curtis (1867) and Wood and McCarthy (1886), but according to Fernald, who states that his new species has been passing for that entity, *S. Elliottii* is not known from north of southeastern South Carolina. Our specimens fit Fernald's description of *S. inflexa* and, judging from his citation of specimens, this report is the first for North Carolina.

HIBISCUS ACULEATUS Walt. CARTERET COUNTY: very abundant on the bank between road and drainage-canal e. of Newport, August 4, 1949, *Godfrey and Blomquist* 49800; NEW HANOVER COUNTY: sand-ridge, Carolina Beach, August 7, 1938, *Godfrey* 5901; Wilmington (without further data) (in herb. N. Y. B. G.—ex herb. Princeton University, 1945).

Though it was listed by Wood and McCarthy (1886) and by Curtis (1835) (as *H. scaber*) with the annotation "Brunswick County," Small (1933) extends it northward only to South Carolina in the coastal plain.

HIBISCUS PALUSTRIS L. (sensu Fernald in RHODORA 44: 269. 1942). NASH COUNTY: boggy swale, on U. S. Rt. 301, 5 miles n. of Rocky Mount, July 22, 1949, *Fox & Godfrey* 2736; CRAVEN COUNTY: in black-muck soil, roadside-ditch, 1 mile n. of Epworth Church on N. C. Rt. 118, June 3, 1950, *Whitford*.

Two previously known stations for North Carolina were published by Fox and Godfrey (1949).

HELIANTHEMUM CORYMBOSUM Michx. CARTERET COUNTY: sandy clearing, Lennox Point, e. of Beaufort, July 15, 1949, *Fox & Godfrey* 2695; near edge of water, east end of Harker's Island, May 23, 1941, *Radford and Stewart* 1172 (in herb. U.N.C.).

Curtis (1835) and Wood & McCarthy (1886) list this species for the Wilmington area, but Small (1933) gives coastal plain of South Carolina as the northernmost limit. There is a specimen in the Herbarium of the New York Botanical Garden, with name *Cistus corymbosus*, labelled simply "Wilmington."

LECHEA PATULA Leggett. **BRUNSWICK COUNTY**: in coarse sand of plowed fire-lane in longleaf pine barren, Orton Plantation, 10 miles n. of Southport, September 12, 1941, *Godfrey* (*Plantae Exsiccatae Grayanae* 1161); **MOORE COUNTY**: sandhill old field, near Manly along U. S. Rt. 1, September 15, 1949, *Godfrey* 50086.

In Hodgdon's monograph (*RHODORA* 40: 62-63. 1938) there are no collections cited from north of South Carolina, and Dr. Hodgdon, who identified both of these collections, informs us that he has seen no others from North Carolina.

LILAEOPSIS CAROLINENSIS Coulter & Rose. **DARE COUNTY**: Manteo, July 6, 1923, *B. W. Wells*.

According to Fernald (*RHODORA* 42: 371. 1940) this species was described from a "single collection from North Carolina (presumably near Wilmington)" and on p. 470 (*loc. cit.*), he lists his collection from Princess Anne Co., Va., as representing the fourth known station in North America. Dr. D. S. Correll informs us that there is a specimen in the U. S. National Herbarium collected by Gerald McCarthy in New Hanover County.

TORILIS NODOSA (L.) Gaertn. **CARTERET COUNTY**: edge of street, near Holden's Cafe, Beaufort, May 14, 1950, *Blomquist & Batson* 14975.

Mathias and Constance (*N. A. Flora* 28B (1): 110. 1944) state that it is "adventive throughout the southern United States," but we have seen no collections or records of collections from North Carolina.

DAUCUS PUSILLUS Michx. **PENDER COUNTY**: Rocky Point, May 21, 1925, *A. C. Martin*; **BRUNSWICK COUNTY**: abundant in roadside-borders along N. C. Rt. 303 north of Southport, May 21, 1949, *Godfrey* 49160.

Mathias and Constance (*N. A. Flora* 28B (1): 113. 1944) give South Carolina as the northern limit of range on the east coast. Small (1933) had listed Florida as the eastern limit. It is well established in and around Southport and apparently has been for a long time, inasmuch as Curtis (1835) and Wood and McCarthy (1886) list it for "Smithville," the old name for Southport.

CYNOCTONUM SESSILIFOLIUM (Walt.) Gmel. **NASH COUNTY**: low savanna, 1 mile e. of Middlesex, Rt. 264, July 30, 1935, *Blomquist* 7574 (in herb. Duke); **Craven County**: October, *O. M. Freeman* (in Nat. Arb. Herb.); **CARTERET COUNTY**: edge of road through savanna, along Rt. 70 between Beaufort and

Atlantic, August 8, 1940, *Blomquist* 11281 (in herb. Duke); savanna east of Newport, August 7, 1949, *Godfrey & Blomquist* 49853; COLUMBUS COUNTY: Bug Hill, low pine woods, August 26, 1927, *Schallert* 9450 (in herb. Duke); savanna, northwest of Waccamaw River, along N. C. Rt. 130, August 9, 1949, *Godfrey & Blomquist* 49873; BRUNSWICK COUNTY: savanna, 5.5 miles n. of Bishops, July 31, 1949, *Godfrey & Fox* 49747; NEW HANOVER COUNTY (presumably; not given on label): prope Wilmington, October, 1867, *Canby* (in herb. N. Y. B. G.—ex herb. Princeton University, 1945).

Small (1933) gives the range as "Coastal Plain, Fla. to La.," but Fernald (*RHODORA* 45: 457. 1943) reported it for Brunswick County, Virginia. Alexander (*Castanea* 5: 92. 1940) first recorded it for North Carolina, from New Hanover County.

BREWERIA ANGUSTIFOLIA Nash.³ CARTERET COUNTY: wire-grass, turkey-oak sandhill, along N. C. Rt. 25 at the junction with the Newport road west of Morehead City, July 16, 1949, *Godfrey and Fox* 49596; savanna at edge of pocosin 1½ miles n. of Newport, U. S. 70, July 23, 1946, *Hollis Rogers* 3145 (in herb. Duke); ONSLOW COUNTY: dry sandy soil, Dixon, July 21, 1922, *L. F. & Fannie R. Randolph* 962 (in Gray Herb.); CUMBERLAND COUNTY: roadside, sandy soil, near U. S. Rt. 301, at Rockfish Creek, s. of Fayetteville, June 26, 1949, *Fox and Godfrey* 2401; BLADEN COUNTY: coarse white sand, scrub-oak and longleaf pine sand-ridge, just northwest of White Lake near the Prison Camp, July 9, 1949, *Godfrey and Fox* 49497; in sand near lake, White Lake, July 15, 1935, *Correll* 2578 (in Nat. Arb. Herb.); SCOTLAND COUNTY: sandhill, 12 miles n. of Laurinburg, July 14, 1938, *Godfrey* 5047 (in Gray Herb.); turkey-oak sandhills, six miles n. of Laurinburg, June 27, 1949, *Fox & Godfrey* 2415; BRUNSWICK COUNTY: Southport, July 8, 1897, *Biltmore Herb.* 1665a (in Gray Herb.); sand-ridge, turkey-oak, longleaf pine, ½ mile east of Seaside, July 29, 1949, *Godfrey and Fox* 49727; JOHNSTON COUNTY: sandy land at home of B. E. Smith, September 4, 1932, *B. E. Smith* (in herb. U. N. C.).

BREWERIA AQUATICA (Walt.) Gray. WILSON COUNTY: weedy bank, near U. S. Rt. 264, 0.7 mile w. of Sims, August 25, 1949,

³ Fernald and Schubert (*RHODORA* 51: 35-43. 1949) clarified the identities in our eastern *Breweria*; during their study they requested that we send our material to them, but we were much embarrassed that we had scarcely any to send. During the 1949 season, therefore, we made a considerable number of collections in eastern North Carolina. Prof. Fernald and Dr. Schubert very kindly examined our series and furnished us with their determinations, and Prof. Fernald generously supplied us, in addition, with citations of all of the North Carolina material in the Gray Herbarium. In order to indicate rather positively what our identities in *Breweria* are, as we now know them, we are citing below both the specimens at the Gray Herbarium, those at Duke University and the University of North Carolina, and our own recent collections.

Fox 3157; WAYNE COUNTY: sandy ridge, 5 miles north of Seven Springs, July 16, 1949, *Godfrey and Fox* 49610; WAKE COUNTY: sandy ridge, near the Wake-Harnett County line, 3 miles s.w. of Fuquay Springs on the Duncan Road, July 8, 1949, *Godfrey and Fox* 49404; MOORE COUNTY: dry open pine-woods, 2 miles south of Pinebluff, July 1, 1927, *Wiegand and Manning* 2631 (in Gray Herb.); sandy soil, July 4, 1940, *Grace J. Schallert* (in Gray Herb.); turkey-oak sandhills, near U. S. Rt. 1, 4.7 miles s. of Aberdeen, August 11, 1949, *Fox* 2893; turkey-oak sandhills, 0.8 mi. e. of Lakeview, August 11, 1949, *Fox* 2891; ANSON COUNTY: turkey-oak sandhills remnant, near Sandy Plains Church, 1 mile w. of N. C. Rt. 87, southern part of county, August 11, 1949, *Fox* 2917; NEW HANOVER COUNTY: sand-ridge at Carolina Beach, June 28, 1938, *Godfrey* 4705 (in Gray Herb.); BRUNSWICK COUNTY: C. C. C. Camp, Southport, July 30, 1935, *A. C. Mathews* (in herb. U. N. C.); sand-ridge, turkey-oak and longleaf pine, along Cape Fear River just above Southport, July 27, 1949, *Godfrey* 49719; sand-ridge, near the church at Maco, July 21, 1949, *Godfrey and Fox* 49752; pineland, north of Southport, sandy soil, open thickets, near Coates, July 7, 1942, *Blomquist* 13302 (in herb. Duke); SAMPSON COUNTY: wire-grass sandhills, 5 miles west of Clinton, June 11, 1938, *Godfrey* (in herb. Duke); CUMBERLAND COUNTY: sandy soil with pines and turkey-oaks, by Fayetteville-Sanford road, Ft. Bragg Reservation, July 21, 1929, *H. R. Totten* (in herb. U. N. C.); RICHMOND COUNTY: turkey-oak sandhills, on U. S. Rt. 1, 2½ miles n.e. of Rockingham, June 8, 1950, *Fox* 3656; County not indicated: Photo of type of *Convolvulus patens* Desr., e. Carolina, *Fraser* (in Gray Herb.).

BREWERIA HUMISTRATA (Walt.) Gray. HERTFORD COUNTY: pineland, 4 miles w. of Winton, July 18, 1938, *Godfrey* 5229 (in Gray Herb.); HALIFAX COUNTY: pineland, 4 miles w. of Winton, August 18, 1938, *Godfrey* (in herb. Duke); GREENE COUNTY: dry sandy soil, waste ground, Snow Hill, July 8, 1922, *Randolph & Randolph* 760 (in Gray Herb.); LENOIR COUNTY: in low grounds of Neuse River, Kinston, August 8, 1931, *H. R. Totten* (in herb. U. N. C.); HARNETT COUNTY: in an open pine-woods on a slope above Avent's Creek, about 5 miles west of Kipling, July 8, 1949, *Godfrey and Fox* 49427; PAMLICO COUNTY: roadside, Arapahoe, July 10, 1933, Oosting (in herb. Duke); PENDER COUNTY: Burgaw, June 26, 1945, *Wells*; NEW HANOVER COUNTY: Wilmington, *M. A. Curtis* (in Gray Herb.); sandhills, Carolina Beach, July 7, 1940, *Wells*; BRUNSWICK COUNTY: dry pine-woods, 3 miles e. of Leland, July 5, 1927, *Wiegand and Manning* 2634 (in Gray Herb.); SAMPSON COUNTY: dry open sandy soil along Black River, near Tomahawk, June 20, 1935, *Correll* 1285 (in herb. Duke); CLEVELAND COUNTY: sandy bank of Broad River, near Rt. 150, 4 miles s. of Boiling Springs, August 5, 1947, *Fox* 672;

DARE COUNTY: in tall pine-woods, very dry, about $\frac{1}{4}$ mile s. of Ft. Raleigh, Roanoke Island, September 21, 1940, *Radford & Stewart* 830 (in herb. U. N. C.).

BREWERIA MICHAUXII Fern. & Schubert. COLUMBUS COUNTY: abundant in an extensive wire-grass savanna, n.w. of Waccamaw River, along N. C. Rt. 130, August 9, 1949, *Godfrey and Blomquist* 49868; BRUNSWICK COUNTY: abundant in wire-grass savanna, near the church at Maco, July 31, 1949, *Godfrey and Fox* 49750.

Prof. Fernald tells us that there were no specimens of this entity in the Gray Herbarium from north of Georgia.

BREWERIA PICKERINGII (Torr.) Gray. NEW HANOVER COUNTY: sandhills between the Cape Fear and Northeast Cape Fear Rivers, north of Wilmington, *Godfrey, Wells and Beaman* 50032, August 25, 1949.

Typical *Breweria Pickeringii* has been known only from the type-collection (see Fernald and Schubert, 1949) from dry sand, Wilmington, N. C. This, then, constitutes rediscovery of the plant in its type-locality after the lapse of 116 years. It is listed by Woods & McCarthy (1886).

POLEMONIUM REPTANS L. STOKES COUNTY: bank of Town Fork Creek, just s. of Walnut Cove, April 23, 1950, *Fox, Godfrey & Blomquist* 3562.

The range given by Small (1933) includes North Carolina, but we have seen no collections and only one record for the state, that of Curtis (1867), for Haywood County. It is not included by Blomquist and Oosting (1948) for the piedmont region, in which physiographic province the above cited station is located.

SOLANUM GRACILE Link. PENDER COUNTY: depression behind road in beach-dunes, 1 mile n. of New Topsail Beach, July 1, 1950, *Fox & Boyce* 3732; CARTERET COUNTY: depression between sand-dunes, west of Salter Path on Bogue Bank, July 15, 1949, *Fox, Godfrey and Blomquist* 2689; HYDE COUNTY: Ocracoke Island, June 23, 1938, *Wells and Shelbourne* 4766 (in U. S. Nat. Herb.).

This species was apparently first recorded for this state by Lewis (1917) from Shackleford Bank, Carteret County. Small (1933) extends the range into the state "near the coast," but as far as we have been able to determine, there are no other records for North Carolina.

SALPICHROA RHOMBOIDEA Miers (*Perizoma rhomboidea* (Hook.) Small.) CARTERET COUNTY: roadside near sound, Morehead City, May 3, 1941, *Whitford*; by Beaufort Channel, Beaufort, July 25, 1946, *Rogers & Blomquist* 3186 (in herb. Duke); abundant on the waterfront in Morehead City, August 3, 1949, *Godfrey* 49770.

Small (1933) gives only "waste places, Fla." for this South American plant. It is apparently well established in Beaufort and Morehead City.

BUCHNERA FLORIDANA Gandoger. WAKE COUNTY: railroad savanna, just east of Durham-Wake County line, north of Morrisville, along U. S. Rt. 70A, July 13, 1949, *Godfrey* 49516.

Small (1933) gives a range which includes only the coastal plain of North Carolina, and Blomquist and Oosting (1948) do not include this species as a part of the piedmont flora. The above locality is definitely in the lower piedmont.

PEDICULARIS CANADENSIS L. ONSLOW COUNTY: part-time swamp, near Comfort fire-tower, Hofmann Forest, April 5, 1948, *Boyce & Woods* 606; COLUMBUS COUNTY: locally abundant in burned, disturbed savanna, near Old Dock, May 13, 1950, *Godfrey & Wiebe* 50371; JOHNSTON COUNTY: marsh, near Princeton, April 16, 1936, *Gladys E. Mitchell* (in herb. Duke).

Curtis (1867) puts this species in "All the Districts," and Croom (1837) lists it for New Bern, but since the above-listed collections are the only ones we have seen from the coastal plain, we feel it worthwhile to list them.

JUSTICIA OVATA (Walt.) Lindau (*J. humilis* Michx.). COLUMBUS COUNTY: drainage-ditch, east of Hallsboro, July 4, 1927, *Wiegand & Manning* 2917 (in Gray Herb.); edge of swamp, moist soil, northwest side of Lake Waccamaw, May 15, 1950, *Blomquist* 15006 (in herb. Duke); NEW HANOVER COUNTY: Wilmington, *M. A. Curtis* (in Gray Herb.); PENDER COUNTY: June 7-12, 1899, *W. W. Ashe* (in herb. U. N. C.); ONSLOW COUNTY: low, swampy ground on Southwest Creek, near U. S. Rt. 17, 4½ miles s. of Jacksonville, June 30, 1950, *Fox & Boyce* 3719; CRAVEN COUNTY: palmetto-swamp near Vanceboro, July 28, 1923, *E. J. Alexander* (in herb. U. N. C.); GREENE COUNTY: swamp bordering stream, July 8, 1922, *L. F. & Fannie R. Randolph* 706 (in Gray Herb.); in woods, river bottom along the Contentnea River, near Snow Hill, June 21, 1935, *Correll* 1334 (in Nat. Arb. Herb.).

Small (1933) gives the range as "Fla. to Texas and Va." Croom & Loomis (1833) and Croom (1837) list it for the New Bern area, Curtis (1835) for Wilmington, and Curtis (1867) lists it for "LOW. DIST." (as *Dianthera ovata* Walt.), but due to the paucity of collections from North Carolina in the herbaria in the state and to the lack of modern published records for the state, we feel it worthwhile to record the above collections here.

PHRYMA LEPTOSTACHYA L. CRAVEN COUNTY: wooded bluff, Flanner Beach, on Neuse River, 10 miles below New Bern, July 14, 1949, *Godfrey & Fox* 49544.

This is the only collection from the North Carolina coastal plain of which we are aware. Fernald (RHODORA 37: 442-443. 1935) has described a variety of this species, var. *confertifolia*, which differs in having the internodes shortened so that the leaves appear subverticillate and in having less pubescent stems and blunter leaf-tips. He says that no typical *P. Leptostachya* was seen on the coastal plain of Virginia.⁴ Plants of our collection have no internodes less than 2 cm. long, some were 8-11 cm. long, and we can see no substantial difference in pubescence and leaf apex between our specimens and several collections from the piedmont region.

GALIAM UNIFLORUM Michx. HERTFORD COUNTY: pine-woods, Bigwoods Experimental Forest, August 26, 1948, *Moreland and Woods* BW117.

The range given by Small (1933) is "Fla. to Tex. and S. C." This species was reported for Princess Anne Co., Va., by Fernald (RHODORA 37: 446. 1935), extending its range from South Carolina, but this is apparently the first report for North Carolina. There are several collections from southeastern Virginia in the Gray Herbarium.

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⁴Before his death Professor Fernald had informed us that subsequently typical *Phryma Leptostachya* was found in three counties on the coastal plain of southeastern Virginia.

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WHY SO MANY CARELESS BOOKS ON TREES
AND OTHER PLANTS?

M. L. FERNALD

EVERYONE is interested in trees. The poet and sentimental writer adore them; but we do not expect precision from them, and their ebullitions should not be looked upon either as science or as factual. Science aims, at least, at the truth and its unravelling, and the student of so-called applied science professes to have a similar standard, tempered by the practical. I have more than once risked my peace of mind by publishing criticisms of some of the books on trees or other plants, and have been very obviously disliked by the authors for so doing. But still the trees are a tempting subject, both for those who admit that, for dramatic effect, they alter the facts, and by others who seem to be stating facts but who, obviously, have done altogether too little verification from the more exact and less spectacular sources which are available.

The special volume which has just come to hand and which is bound to puzzle those who have a fuller knowledge of the ranges of our trees, is a very attractive book with abundant and mostly well executed drawings of distinctive parts of our trees, and abundant and too often misleading maps of their supposed ranges. This is *North American Trees* by Richard J. Preston.¹ As said, the illustrations are mostly to be praised, some by artists specially employed for this work, some borrowed from other publications. My trouble is chiefly with the maps. The first map in the book, "*Forest Regions and principal types of Forest in the United States*," at once makes some of us gasp. As one born in the "Pine-tree State," named for the White Pine, *Pinus Strobus*, for two centuries and more considered the most important timber-tree of New England, New York and adjacent Canada, it comes as a shock to see among the "*Principal types of forest*" that the "White, red and jack pine" "type" is restricted to northern Minnesota and areas in Wisconsin and Michigan. In New England and eastern Canada *Pinus Strobus* is a tree usually of

¹ RICHARD J. PRESTON. *North American Trees*. 371 + lv pp., 160 plates. Iowa State College Press.

good soil, *P. resinosa* of dry and siliceous soil, and *P. Banksiana* (Jack-Pine) of the most hopelessly barren soil. There they rarely if ever mingle. The map (p. 8) showing EASTERN WHITE PINE, indicates it as extending across the area where it was so long considered the only timber tree of value. Newfoundland is left blank, but could have been dotted.

It is the maps of ranges of many of the individual species which will cause the local and competent authorities on special states or adjacent provinces to wonder. Passing the Spruces and the Larches for the moment, we will start with the BALSAM-FIR, *Abies balsamea*. All New England and New York (including Long Island) are dotted, but if the Fir occurs in southeastern New York south of the higher Catskill Mts., on Long Island, in southern or eastern Massachusetts (except in the northeastern corner of the state), it must have been planted.

Similarly, the NORTHERN WHITE CEDAR, *Thuja occidentalis*, is shown as covering all Pennsylvania, New Jersey, New England and Nova Scotia. In 1919, however, in a somewhat detailed study², of the occurrence of that species, I wrote:

"In Massachusetts *Thuja occidentalis* is confined to the calcareous upper Connecticut Valley and to the Stockbridge limestone region of Berkshire County.

"In Connecticut it is indigenous only in the limestone region of northern Litchfield county: 'Canaan, on a limestone ridge and in a near-by swamp (C. K. Averill), Salisbury, rocky hillside and at another locality in a deep swamp (Mrs. C. S. Phelps).'

"In southern New York *Thuja occidentalis* was formerly known on the lower Hudson: 'At Verplanck's Point . . . on . . . fine bluffs of palaeozoic limestone,' where it was associated with other calcicoles, *Anemone canadense*, *Arenaria stricta*, *Arabis lyrata*, etc.; and at other stations lower down the Hudson (now presumably extinct).

"In New Jersey the only authentic records are from the lower Hudson, the old records from farther west, having been doubted. In other words, in Connecticut and southeastern New York and adjacent New Jersey *Thuja occidentalis* occurs only in the localities indicated so clearly on Dana's map of limestone areas of the region (including the Palisade trap range), or as Dana concisely defines it 'the belts of limestone . . . which extend southward in eastern New York and from Canaan and Salisbury in Connecticut' (In Connecticut *Thuja* is known only from Canaan and Salisbury!).

"In Pennsylvania, according to Porter, *Thuja* is 'Generally escaped from cultivation, but not definitely known in the native state'; and Long likewise emphasizes that the tree 'appears to be quite unknown in a native state in the wide mountain area of Pennsylvania'."

² Fernald, Lithological Factors limiting the Ranges of *Pinus Banksiana* and *Thuja occidentalis*, RHODORA, xxi, 42-67 (1919)—Contrib. Gray Herb. n. s. no. LVIII.

Subsequently, I am informed, *Thuja* has been found as a native along the mountains of Pennsylvania but that hardly justifies the impression that it covers the state. At the same time (map, l. c. p. 45) I showed its occurrence over a large area west of Hudson Bay; and its extreme localization in Nova Scotia is well known.

Juniperus virginiana, EASTERN RED CEDAR, appears from the map (p. 108) to extend northeastward along coastwise Maine into southern New Brunswick and the length of mainland Nova Scotia. But neither the Nova Scotian botanists nor those of New Brunswick know of it in their provinces, and in Maine it is confined to the southwestern corner of the state. Similarly, the maps show as Nova Scotians some other species which were unknown to Dr. Roland when he published his *Flora of Nova Scotia* in 1944: such species as *Salix nigra*, *Quercus macrocarpa* and *Tilia americana*, for example.

Many other mapped ranges in the Northeast are even more misleading. For the sake of simplicity, these will be noted in their order in the new book, although I am omitting mention of various native trees which are not included by the author.

EASTERN COTTONWOOD, *Populus deltoides*. The map (p. 124) shows a conspicuous blank extending from northeastern New York to Lake Ontario, thence southward across central Pennsylvania and all the region eastward. Had its author consulted House's *Annotated List of Ferns and Flowering Plants of New York* he could have read: "Frequently or locally abundant across the State from Lake Champlain west to Jefferson county (outside of the Adirondacks), Lake Ontario and Lake Erie. Increasingly common southward and westward, especially along the larger streams and river valleys."

BLACK WALNUT, *Juglans nigra*, is shown as having its northeastern limit extending from eastern Massachusetts across southwestern New Hampshire and southern Vermont to northeastern New York and thence westward and southward; but it is certainly not native in central and eastern Massachusetts and the acute botanists of Connecticut say: "derived from planted trees" but "Probably native at North Canaan" (in the northwestern corner of the state and near its native stations in extreme western Massachusetts). For New York House says: "northward to

Rensselaer, Washington and Saratoga counties, the Mohawk valley, Lewis and Jefferson counties and westward to Lake Erie. Rare in the Chemung and Tioga regions." That clips off much of northeastern New York.

Carya. Three species are mapped as extending into Maine. Hyland and Steinmetz, *Woody Pl. Me.*, consider only one of them indigenous, the others planted from outside the state.

RIVER-BIRCH, *Betula nigra*. The map shows a broad northeastern tongue extending from southwestern Connecticut to northwestern Massachusetts, thence, by way of central Connecticut, Massachusetts and southwestern New Hampshire, into the eastern half of the latter state. This is very misleading. There is no evidence of it in western and central Massachusetts nor in western New Hampshire. Its localization in New England is at the southwestern corner of Connecticut and (about 150 miles away) in northeastern Massachusetts and adjacent southeastern New Hampshire!

GRAY BIRCH, *Betula populifolia*. The northeastern portion of the map (p. 152) northeastward from a line extending from Prince Edward Island to the region of Montreal, seems to extend the species far outside its true range. There is certainly none of it on the Gaspé Peninsula, but its place is there taken by the technically very different *B. caerulea-grandis* Blanchard³, unknown to the writer of the new book.

Quercus. The northern range of *Q. alba* stops, so far as we know, in central Maine; it does not extend, as indicated on the map, into New Brunswick. *Q. stellata* is made to occur all over Massachusetts. Actually its northeastern limit is on Cape Cod.

WITCH-HAZEL, *Hamamelis virginiana*. The map shows it covering not only the Gaspé Peninsula of Quebec, where it does not occur, but extending out the North Shore (Côte Nord) to a point opposite the western end of Anticosti Island. Victorin, Fl. Laurent., gives its eastern limit in Quebec as the Isle of Orleans, more than 350 miles southwest of the unfortunately mapped northeastern limit.

AMERICAN MOUNTAIN-ASH, *Sorbus americana*. The map (p. 248) shows the northern limit of this really very distinct species to extend in a regular arc from southeastern Labrador to north-

³ For discussion of this species see Fernald in RHODORA, xx. 171-173 (1922).

western British Columbia, its southern limits in the West to be in New Mexico, Arizona and southern California. For a tree that is a most extraordinary range. Apparently the *Synopsis of the North American Species of Sorbus* by Dr. G. N. Jones in Journ. Arn. Arb. xx. 1-43 (1939) did not influence the author. Jones correctly gives the range of *S. americana* as "Newfoundland to northeastern Minnesota, southward across northern Illinois to eastern Tennessee and North Carolina". But Preston's range extends it 400 miles north of the known northern limit of the species and about 1700 miles northwest of the northwestern limit and about the same distance to the west of the southern limit in the Appalachian Mts. That would seem to be a big enough error; but look at the illustration (p. 249). In his key Preston correctly says "leaflets usually lanceolate and acuminate", but he (or his artist) shows short oblong-elliptic round-tipped leaflets such as never occur in *S. americana*, but are similar to those of the western *S. scopulina* Greene. Ho, hum!

DOWNY SERVICE-BERRY, *Amelanchier arborea*. Here, again, though with mapped range only 700-800 miles out of the way, the author of the new book has gone astray. I happen to know *A. arborea* since, in RHODORA, xliii. 563, t. 672, fig. 2 (1941), I pointed out the necessity to take up the name. *A. arborea* is a tree occurring from northern Florida to Louisiana and eastern Oklahoma, north to southwestern New Brunswick, southeastern and central Maine, southwestern Quebec, southern Ontario, northern Michigan and northeastern Minnesota. Its range was correctly stated and a good map published in Dr. G. N. Jones's *American Species of Amelanchier*, Ill. Biol. Monog. xx. no. 2, 36-39, map 5 (1946). Nevertheless, true to form, the new map shows it, incorrectly, extending to the extreme eastern corners of Newfoundland and the southern parts of the Labrador Peninsula, 700 miles out of the way.

BLACK HAWTHORN, *Crataegus Douglasii* (p. 252) has its eastern extension remarkably truncated at the western edge of Minnesota. In nature, however, it abounds in some areas of southern Ontario and northern Michigan.

COMMON CHOKE-CHERRY, *Prunus virginiana*. Here the author includes both the eastern and the western trees, about which there may be a difference of judgment; but the eastern tree (or

shrub) surely does not occupy a full half of the Labrador Peninsula, as he indicates.

MOUNTAIN WINTERBERRY, *Ilex montana*, is a characteristic upland species, occurring from western Massachusetts across New York State, thence south on the uplands to Georgia, Alabama and Tennessee. This chiefly montane range is not clearly brought out by a map (p. 290), showing a solid broad band extending eastward to eastern Massachusetts, eastern Connecticut, Long Island and the outermost coast from New Jersey to Georgia, etc. The wholly appropriate specific name really gives a clue.

WAHOO or BURNING BUSH, *Euonymus atropurpureus*. The astonishing map shows a northeastern tongue stretching from eastern New York across all of New England, except northern Maine, and on into New Brunswick; the eastern limit south of New York cutting across Pennsylvania to Ohio, thence southward. Surely the species is not native in New Brunswick nor New England, but it is certainly native in eastern Virginia. Enough said.

One could go on and on with other maps which sadly ignore or distort readily available facts, but my laments over the REDBUD, HOPTREE, STRIPED MAPLE, BLACK ASH, etc., would be much like the others.

These are enough, however, to show that the author of the very attractive new book has not very carefully scrutinized the ranges, but the deferred Spruces and Larches should be noted. The maps show the White Spruce, *Picea glauca*, and the Black Spruce, *P. mariana*, as both extending solidly northward to Cape Chidley (lat. 60° 33'), at the eastern entrance to Hudson Bay; but, as long ago as 1896, the great Canadian explorer of the Labrador Peninsula, Low,⁴ pointed out that "The tree-line," after skirting Ungava Bay, "turns southeast, then southward [not northeast, then northward] to the neighborhood of Hebron, in latitude 58°"; and (pp. 34, 35) Low pointed out that on the Labrador Peninsula the White Spruce falls far short of this northern limit of trees. Cape Chidley, however, would seem from the new book to be only a way-station in the northward range of *Conifers*. Look on p. 44, where TAMARACK, *Larix laricina*, is imagined to extend way across to Baffin Island and

⁴ A. P. Low, Geol. Surv. Can. Ann. Rep. n. s. viii. 31 L (1896).

then north to the Arctic Circle! Polunin, in his *Botany of the Canadian Eastern Arctic*, i. (including Cape Chidley) says (p. 39): "*Gymnospermae* are unknown in our area", and nothing suggesting a tree is known on Baffin Island!

I have, naturally, not checked on the regions with which I am not somewhat acquainted or about which I have learned from authoritative sources; but when I read, under the heading "TROPICAL FOREST REGION," that "In . . . extreme southern . . . California are forests made up largely of tropical species", I naturally wonder and at once turn to Abrams's masterly *Phytogeographic and Taxonomic Study of the Southern California Trees and Shrubs*, Bull. N. Y. Bot. Gard. vi. no. 21 (1910). Abrams seems not to have realized that his flora was "largely of tropical species" and a check on the ranges of Mexican *Pinaceae* recorded in Standley's *Trees and Shrubs of Mexico* shows only one or two Californian species which push down to the Tropic of Cancer and these only on the mountains, well above the tropical zone. Simply because many typical plants of the eastern United States are now being found on mountains of Mexico south of the Tropic of Cancer, we do not call the Alleghenian forest a tropical one. Along the eastern margin of the United States, particularly on or near the Coastal Plain, at least 175 of the indigenous species extend northward to Virginia, Delaware, New Jersey, Long Island or southern New England (or even Nova Scotia) from the West Indies, Mexico or Central America. But we do not, on this account, call the flora of the northeastern border of the United States a really tropical one. There subarctic, Canadian, north-temperate, western European, isolated south-temperate, tropical and other elements more or less commingle, the result of dramatic geographic changes in the topography and past connections of the region. The geographic classification of the floristic elements of this and most other large areas is not a simple problem.

Chaney, who certainly knows the history of California trees, places the presence of a subtropical forest in California at fifty million years ago, not in present time: "A study of the history of the earth and its life indicates that there has been a gradual cooling and drying of the climate since the days, fifty million years ago, when the redwood lived in Alaska and when a sub-

tropical forest covered California"—Chaney, *Redwoods of the Past*, 4 (Pub. Save-the-Redwoods League, 1941). It hardly seems possible that the recent statement started there.

Enough has been noted to make evident the need for much greater care and scrupulous checking before attempting to instruct a public, which does not know accuracy from inaccuracy. The attractive book, which by the mere chance that a copy of it suddenly appeared on the table near me, is as good an example as are some other grossly inaccurate ones which are in vogue as authoritative books on phytogeography. This severe criticism is made in all friendliness, and, if a new edition is ever called for, it is to be hoped that it will be prepared with more attention to the actual ranges of the trees discussed.

RHODODENDRON MAXIMUM AT MEDFIELD, MASSACHUSETTS.—In July 1950, I visited the Rhododendron Reservation in Medfield, Massachusetts, and found that conditions there had greatly improved and that the shrubs had spread and were flowering very well.

The Trustees decided there was too much water in the swamp, and drained off the surplus. It also seemed that the shade was too dense, so a number of trees were removed to let in more light, but not too much. As a result of these corrections the shrubs seem to have taken on new life and bid fair to rival the station at Fitzwilliam, N. H.—CLARENCE H. KNOWLTON, Hingham, Massachusetts.

GOODYERA TESSELLATA IN RHODE ISLAND.—The early lists of New England plants mention *Goodyera repens* as occurring in the State of Rhode Island, but make no mention of the occurrence of *G. tessellata* in this State.

Before the destructive hurricane of 1938, I found in Rhode Island two flourishing colonies of a Rattlesnake-plantain whose flower-stalks were small and slender, averaging about 6" tall, and all without exception with distinctly one-sided racemes. Both colonies were growing under pines in rather damp situations. I believed these to be *Goodyera repens*. The hurricane and subsequent clearing up of damaged trees completely obliterated both

colonies, so that for several years I knew of no *Goodyera* in Rhode Island, except the rather common *G. pubescens*.

However, in the early fall of 1948, Mr. John B. Hudson found a colony of *Goodyera* plants, obviously not *pubescens*, growing in moist woods under hemlocks in the town of Glocester, R. I., and we later visited the colony together. At first we both assumed them to be *G. repens*, but when we found rather thick-stemmed plants 10" or more in height and with the flower-raceme cylindrical, we began to suspect that some, at least, of the plants might be *G. tessellata*.

We, therefore, on August 12, 1950, collected two specimens, both in fruit, one with a cylindrical raceme and the other with a one-sided raceme, and I took both to Dr. Fernald, at the Gray Herbarium, for a positive identification. Dr. Fernald identified both as *G. tessellata*, but suspected that there may have been some hybridizing with *G. pubescens*, which is frequent in the same woods.

Dr. Fernald believes that the plant which in the early records was called *G. repens* was the plant which is now called *G. tessellata*. Some of these records were made before *tessellata* was recognized with us as a species, that is, when only *pubescens* and *repens* were being recognized, so that a plant which was clearly not *pubescens* must have been considered to be *repens*.

It appears likely that the smaller plants with one-sided flower-racemes which were destroyed by the 1938 hurricane were really small specimens of *G. tessellata*. It is doubtful that *repens* has ever been found in Rhode Island.—CHARLES S. BRYAN, Providence 6, R. I.

MISPRINTS AND OTHER TYPOGRAPHICAL ERRORS IN GRAY'S MANUAL.—Those who detect misprints, wrong letters, omissions from indices, etc. in the 8th edition of Gray's Manual will confer a favor by calling them to the attention of the Director of the Gray Herbarium, that the more serious errors may be corrected in the second printing. Omissions of species, etc. will be assembled toward a later series of Addenda.—Send corrections to the Gray Herbarium, 79 Garden Street, Cambridge 38, Mass.

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